Department of Health
and the Welsh Office

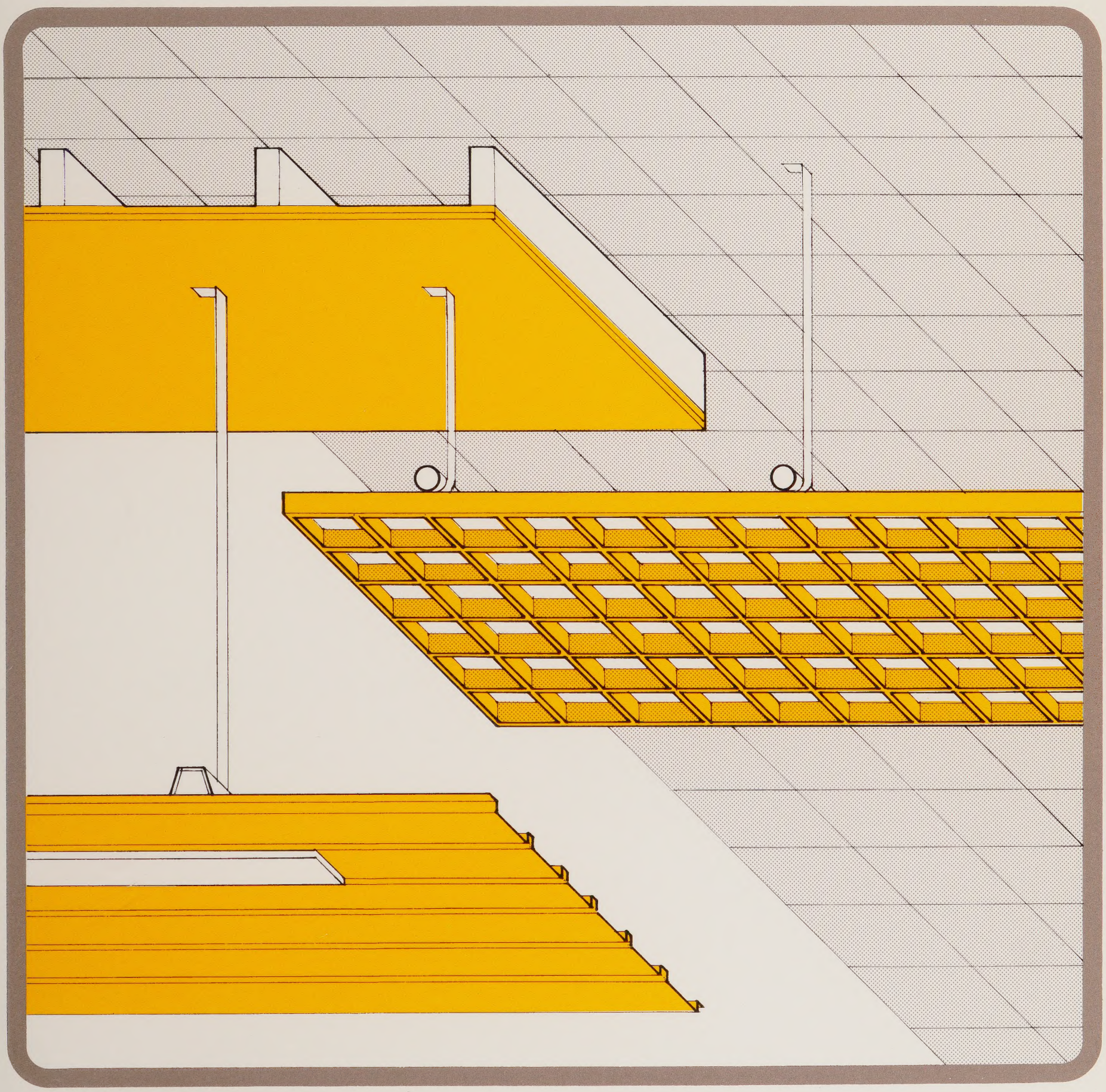
MC0014

Health Technical Memorandum

Building components

Ceilings

60



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1 Introduction

1.1 Background

This is one of a series of *Health Technical Memoranda* which provide specification and design guidance on building components for health buildings which are not adequately covered by current British Standards.

The series supersedes all Component Data Base Mk 3 (and earlier Manufacturers Data Base) information.

The numbers and titles of the HTM in the series are:

54 Building components and user manual
55 Windows
56 Partitions
57 Internal glazing
58 Internal doorsets
59 Ironmongery
60 Ceilings
61 Flooring
62 Demountable storage system
63 Fitted storage system
64 Sanitary assemblies
65 Signs
66 Cubicle curtain track
67 Laboratory fitting out systems
68 Duct and panel assemblies
69 Protection
70 Fixings

The technical information in this series is the result of research and development funded by the Department as part of collaborative working arrangements over a number of years between the Department, the NHS, and Industry through the medium of the Component Data Base.

Any enquiries regarding the technical content of this HTM should be directed to Health Building Directorate, Department of Health, Euston Tower, 286 Euston Road, London NW1 3DN.

1.2 General considerations

The provision of ceilings which will meet user requirements and the conditions of use in health buildings will depend upon the co-ordination of information and decisions taken at all the following stages:

- design brief
- design and specification
- production documentation
- procurement
- construction
- commissioning
- cleaning and maintenance.

1.3 Scope and status

This HTM offers guidance on all these stages, or refers to other authoritative sources of information.

Its content does not diminish either manufacturer responsibility for fitness for purpose of products, or design team responsibility for selection and application of products to meet project requirements.

1.4 Application

Because of the wide ranging considerations necessary to successful selection, specification, installation, and use of ceilings, this HTM should be made available to project teams, design teams and those responsible for construction, commissioning and maintenance of health buildings.

It is mainly concerned with new building work but much of the information it contains is equally applicable to renewal of ceilings in existing buildings.

1.5 Relationship to other data

The main sources of data used in the preparation of this HTM are listed in the References section.

This HTM was prepared for printing in April 1985 and revised in June 1988 and is based on data current at that date. Readers should ensure that they use the latest edition of all building legislation, British Standards, etc., and give first preference to products and services from sources which have been Registered under BSI Quality Assurance procedures or other certification schemes.

Suppliers offering products other than to British Standards should provide evidence to show that their products are at least equal to such Standards.

Sections of the National Building Specification relevant to ceilings are listed in Appendix B.

1.6 Terminology

The following terms are used throughout this HTM. Others are defined in the sections in which they are used:

Suspended ceiling system – a ceiling supplied and fixed complete, generally comprising a membrane and horizontal and vertical support members. These systems are usually proprietary.

Traditional ceiling – a non-proprietary, jointless ceiling, normally provided by the builder, of plaster applied directly to the structural soffit or of plasterboard on wood joists.

2 User requirements

2.1 Categories of performance

Six performance categories have been established to relate user requirements for ceiling membranes in the various activity spaces in health buildings, to the physical and performance characteristics of ceilings. These are set out in the table below and defined in 2.2.

Physical and performance characteristics	Categories of ceiling performance					
	1	2	3	4	5	6
Soffit:						
smooth	●	●	●	○	○	○
textured				○	○	○
imperforate	●	●	●	○	●	○
perforated				○		○
jointless	●	○	○	○	○	○
jointed		○	○	○	○	○
Humidity:						
normal	●		●	●	●	●
high		●				
Spread of flame:						
class 1	●	●	●		●	●
class 0				●		
Cleaning :						
A	●					
B		●				
C			●		●	
D				●		●

● – indicates essential requirement ○ – indicates options

These categories provide:–

- a convenient method for stating user requirements in respect of ceilings in Appendix A of this HTM and in client briefs to design teams.
- a simple performance designation for manufacturers to apply to ceiling systems which meet the requirements in any given category.
- convenient references for building designers and specifiers when assessing ceiling systems and products.

These six categories apply equally to both suspended ceiling systems and traditional ceilings as their physical and performance characteristics refer only to the soffit of a ceiling.

2.2 Physical and performance characteristics

Physical characteristics of soffit

The physical characteristics of the soffit may be defined as:

- **Smooth** – no coarser than a brush applied matt emulsion paint on a flat plastered surface without projections, indents, or holes.
- **Textured** – a surface other than smooth.
- **Imperforate** – without holes through the membrane.
- **Perforated** – having a pattern of pre-formed holes into or through the membrane.
- **Jointless** – either having no joints or having joints which are completely sealed so that the whole of the finish is impervious and will prevent the collection of dirt and bacteria.
- **Jointed** – other than jointless.

Humidity

Ceilings should be capable of withstanding either normal or high humidity:

- **Normal humidity** – 25% to 65% relative humidity over an air temperature range of 10°C to 25°C.
- **High humidity** – 25% to 100% relative humidity over an air temperature range of 10°C to 30°C.

Surface spread of flame

The Building Regulations (1976) set out the following requirements for buildings in Purpose Group 2:–

- ceilings of circulation spaces and shafts are required to be Class 0.
- ceilings of all other rooms are required to be not less than Class 1.

Many membranes rated as Class 1 will also meet the requirements of Class 0. Relevant test data should be obtained from the manufacturers.

Class 0 is not strictly a surface performance characteristic, as its definition in the Building Regulation refers to the incombustibility of materials, with requirements that:–

- the material of the ceiling shall be incombustible throughout, or
- the surface material (or if it is bonded to a substrate, the surface material in conjunction with the substrate) shall have a surface of Class 1 (to BS 476 Part 7) and if tested in accordance with BS 476 Part 6, shall have an index of performance 'I' not exceeding 12, and a sub-index 'i' not exceeding 6.

Cleaning and disinfection

All ceilings including those with factory applied finishes and those with site applied decorations should be capable of withstanding one or more of the following indicative cleaning routines.

Type	Daily	Quarterly	Annually
A	By hand with a wet mop or cloth; or by machine spraying water at mains pressure with removal by suction		
B		By hand with a damp mop or cloth; or by machine spraying water at pump pressure with removal by suction	
C		By hand with a damp mop or cloth	
D			By industrial suction machine

Notes:
Wet cleaning is usually by hot water containing a mild non-abrasive detergent. Where machine cleaning is being considered the machine manufacturer should be consulted at an early stage to ensure that the ceiling membrane and the proposed cleaning procedures are compatible.

Ceilings should also be cabaple of withstanding disinfection by any of the disinfectants in general use in the NHS.

Characteristics of membranes related to categories of performance

The relationships between membrane materials, finishes and soffit textures to categories of ceiling performance, for ceilings generally acceptable in health buildings, are set out in the following table.

The table may be used to make preliminary selections of membrane materials and soffit textures, but before making final selections the design team will need to examine samples to ensure that products comply with the cleaning and microbiological requirements of the various activity spaces.

Joint pattern and suspension grid	Membrane			Category					
	Material	Finish	Soffit	1	2	3	4	5	6
Jointless membrane concealed grid	plasterboard	site decoration	smooth/imperforate after joints filled	●	○	○	○	○	○
Jointed membrane concealed grid	reinforced plaster	site decoation	smooth/imperforate			○	○	○	○
			smooth/perforated				○		○
	metal	factory finish, stove enamel, etc.	smooth/imperforate			○	○	○	○
			smooth/perforated				○		○
	calcium silicate	site decoration or factory finish	smooth/imperforate		○	○	○	○	○
			smooth/perforated				○		○
	mineral fibre including compressed glass fibre	factory finish, emulsion-type paint	textured/imperforate or perforated				○		○
		factory finish acrylic paint	textured/imperforate		○	○	○	○	○
	perlite	self-finish	smooth/imperforate		○	○	○	○	○
			textured/imperforate				○	○	○
	vermiculite	self-finish	textured/imperforate				○	○	○
	wood composite	site decoration	textured/imperforate or perforated				○		○
Jointed membrane exposed grid	plasterboard	factory finish plastic coating	smooth/imperforate			○	○	○	○
	calcium silicate	site decoration or factory finish	smooth/imperforate		○	○	○	○	○
			smooth/perforated				○		○
		factory finish, spatter paint	textured/imperforate				○	○	○
			textured/perforated				○		○
	mineral fibre including compressed glass fibre	factory finish, emulsion-type paint	textured/imperforate or perforated				○		○
	wood composite	site decoration	textured/imperforate or perforated				○		○
Jointless traditional ceiling	plasterboard and/or plaster	site decoration	smooth/imperforate	●	○	○	○	○	○

Key ● – requirement ○ – acceptable

Membranes

Typical membranes and range of sizes are as follows:

Material	Thickness (approx) mm	Typical unit size mm	Remarks
plasterboard	9.5	sizes as BS 1230	traditional ceilings with skim coat of plaster
	12.5 (one or two layers)	900 x 1800 x 2400	face layer - taper edge boards with filled joints
reinforced plaster	30 to 35	300 x 300 x 600 600 x 600	overlaid with mineral wool mat and plasterboard if acoustic performance required
	10 to 25	600 x 600	
metal	25 to 35	widths from 100 lengths up to 4000	mineral wool in-fill pads or overlays
	25 to 200		open screen
calcium silicate	6, 9 or 12	200 x 2400 x 3000 600 x 600 x 1200 1200 x 1200	perforated tiles are overlaid with mineral wool
mineral fibre including compressed glass fibre	12 to 40	300 x 300 x 600 x 1200 x 1800 600 x 600 x 1200 x 2400	
perlite	20 to 25	300 x 300	
vermiculite	10 to 25	600 x 600 x 1200	
wood composite board	25 and upwards	various sizes cut from 1200 x 3600 board	Can meet Class 0

Soffit textures and joint patterns

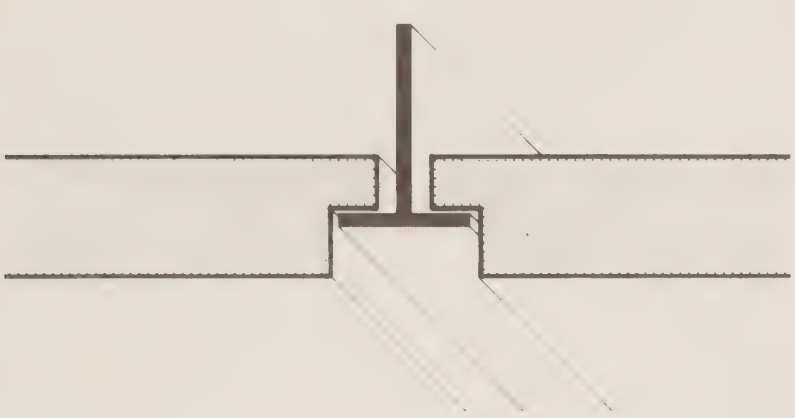
Soffit textures fall into three broad ranges as follows:

- **Smooth** – no coarser than a brush applied matt emulsion paint on a flat plastered surface without projections, indents or holes.
- **Textured** – a surface other than smooth and including such types as textured, embossed, rilled, striated, moulded or fissured.
- **Perforated** – having a pattern of pre-formed holes into or through the membrane and may be used in conjunction with a smooth or textured soffit.

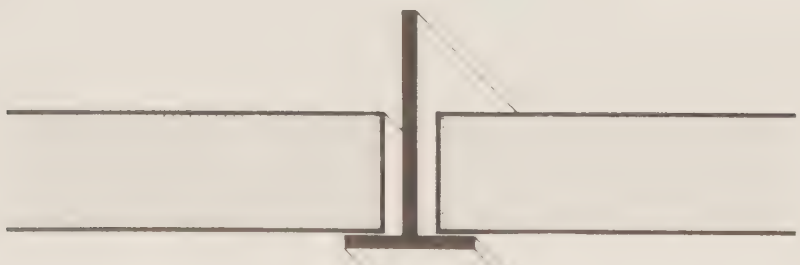
Soffit textures must be compatible with the cleaning and microbiological requirements of the activity space. A smooth soffit should be preferred in clinical areas where Category 5 ceilings are required. A 'low' textured soffit may be used provided it can be cleaned by cleaning method C.

For jointed ceilings the soffit texture should be considered in relationship to the type of grid used eg concealed, recessed or exposed, and the configuration of the joint, as illustrated below:

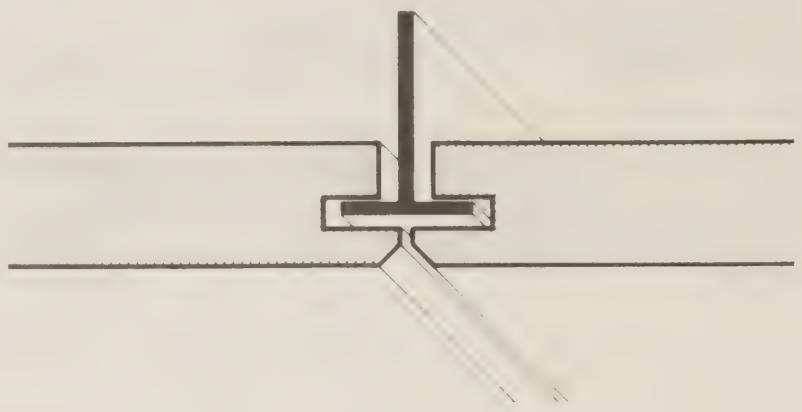
- recessed grid with rebated edged tiles



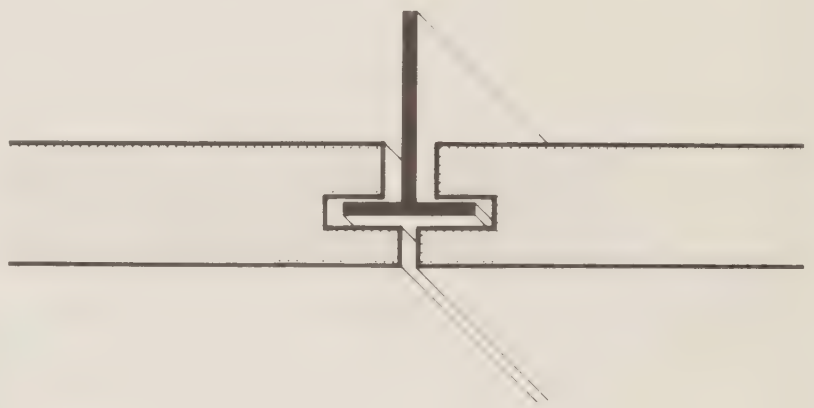
- exposed grid



- concealed grid with bevelled edged tiles



- concealed grid with square edged tiles with fine jointing



3 Design and specification guidance

3.1 General

Ceilings usually consist of one of the following types:

- the soffit of the structure overhead, eg plaster on concrete.
- fixed directly to the structure overhead, eg plasterboard on wood joists.
- suspended from the structure overhead, eg proprietary tile.

Suspended ceiling systems, which predominate throughout this HTM, generally consist of metal vertical and horizontal members (or in special cases timber framing) supporting a membrane which will generally be formed of:

- plasterboard
- reinforced plaster
- metal
- calcium silicate
- mineral fibre
- perlite
- vermiculite
- wood composite board

The suspension system can either be the lay-in type with an exposed grid or a concealed type where only the membrane is visible from below.

The type of suspension will determine whether a ceiling system can be installed in one or two stages. It is essential that systems which can be erected in two stages are specified in areas with mechanical services in the void. This means that the grid can be erected and stabilised before the services are completed, tested and accepted and then followed by the installation of the membrane.

Vertical hangers are normally fixed to the structural soffit and support the horizontal grid. Rigid hangers should be used to resist upwards movements from wind pressure and cleaning procedures.

Horizontal members form a primary and a secondary grid as required and take various forms including channels, angles and Z sections.

3.2 Constituent parts

A traditional ceiling can be either:

- plaster applied direct to the structural soffit, or
- plasterboard fixed directly or indirectly to structural members.

A suspended ceiling system generally comprises:

- membrane
- horizontal and vertical support members
- perimeter trim.

Both traditional and suspended ceilings may require:

- bulkheads at changes of ceiling soffit level
- reveals to rooflight openings or roof access
- trimmed openings with removable panels for engineering access.

3.3 Constituent materials

Any metal structural members of the suspension system should be corrosion resistant

No installation should involve the use of materials containing asbestos

No membrane should contain material which is known to give off appreciably toxic products during combustion

If timber members are incorporated consideration should be given to rot proofing, wood worm protection and fire protection.

3.4 Relationship to partitions and walls

Ceilings should be designed in relation to partitions and walls to achieve the required combined performance in respect of:

- sound insulation
- fire compartmentation/separation
- support

In the case of suspended ceiling systems the preferred relationship in health buildings is one in which the partitions or walls pass through the suspended ceiling membrane, do not require support from the ceiling system, and combine with the structural soffit above to provide fire resisting compartmentation and sound insulation as required.

The alternative relationship in which partitions or walls terminate at, or just above the soffit of a suspended ceiling is not recommended as it demands a ceiling performance in respect of fire resistance and sound insulation which is difficult to achieve and maintain in practice in health buildings, because:

- the number of fittings required at ceiling level is incompatible with testing to BS 476 Part 8 which is based on a test specimen area of ceilings without fittings.
- the scale and frequency of access to engineering services in the ceiling void through the membrane (in respect of fire) and through insulation backing the membrane (in respect of sound) is incompatible with maintenance of these aspects of performance.

3.5 Relationship to roofs

Thermal insulation may be required at ceiling level where the ceiling system is located immediately below the roof void.

It is not advisable to protect the roof construction by incorporating a vapour check into the suspended ceiling since many of the engineering services pierce the ceiling membrane.

3.6 Dimensional tolerances

Main runners or primary support channels should be installed so that they are level within the following permissible deviation:

- spans up to 1200mm – 1/400th of span
- spans up to 1800mm – 1/600th of span

Rigid hangers are preferred as wire hangers make levelling the structural grid more difficult. Wire hangers must be taut to prevent any subsequent deflection when the ceiling membrane is installed.

3.7 Strength

A ceiling system should normally be able to support:

- **dead loading** from the normal range of surface mounted or recessed ceiling fixtures eg lighting fittings and lightweight services such as cables in the ceiling void.
- **live loading** exerted as an upward and sideways thrust during normal cleaning operations.

The structural classification of a ceiling suspension system should be based on the load carrying capacity of the main members and other indirectly hung members of the system.

★ Load carrying capacities of structural members

Structural grade	Minimum kg/lin metre	Maximum kg/lin metre	Use
Grade 1 Light duty	–	15.0	Used primarily where ceiling loads of tile or lay-in panels only are proposed
Grade 2 Inter-mediate duty	15.0	25.0	Used primarily where ceiling loads, not exceeding 25kg/linear metre per suspension member eg for luminaires and air diffusers are proposed
Grade 3 Heavy duty	25.0	–	Used primarily where ceiling loads exceeding 25kg/linear metre per suspension member, eg for luminaires, air diffusers, cubicle curtain track etc, are proposed.

★ The load carrying capacity shall be the uniformly distributed load in kilograms per linear metre that a simply supported continous main member section having a span length of 1200 mm is capable of supporting without the mid-span deflection exceeding 3 mm (ie 1/400th of the 1200 mm span length) when tested in accordance with the method described in Appendix B of the Suspended Ceilings Association's Guide No. 2.

The loads imposed by fittings described in Grades 2 and 3 may be directly supported from the structure above, enabling a lighter grade ceiling to be used.

3.8 Fire resistance of suspended ceiling systems

As stated in 3.4 it is strongly recommended that demountable suspended ceiling systems should not be required to provide or contribute to the fire resistance of structures because health building requirements for fittings mounted at ceiling level and access to engineering services through the membrane are incompatible with the achievement and maintenance in practice of fire resisting performance. However, they should be capable of maintaining stability for 30 minutes when subjected to tests in accordance with BS 476 Part 8 from below to assist escape from the room.

In situations where it is required to sub- divide the ceiling zone at points other than compartment walls and sub-compartment walls to prevent the horizontal passage of smoke and flame, the membranes of ceiling systems should be fire-stopped to the underside of fire stop/cavity barriers extended from the ceiling membrane to the structure above (**For surface spread of flame see 2.2**).

3.9 Sound absorption

The design team will need to know the actual sound absorption performance of the ceiling systems under consideration, in order to control the acoustic performance of any given activity space, particularly rooms where above average levels are generated, eg dining rooms.

Detailed information should be obtained from ceiling manufacturers. The average sound absorption coefficients of the four middle frequencies is called the **Noise Reduction Coefficient** (NRC). A product that has an NRC of not less than 0.50 is recognised as possessing significant sound absorption properties. For further information see Suspended Ceilings Association Guide No. 3 "Recommendations for the selection of suspended ceiling materials".

The sound absorption qualities of some membranes are given below as general guidance:

- **plasterboard and reinforced plaster** – the sound absorption of these materials is not

significant, but reinforced plaster tiles if perforated and with mineral wool overlays have an NRC of 0.75

- **metal** – smooth metal tiles do not absorb sound but for perforated tiles with mineral wool inlays the NRC is in the range of 0.70 to 0.95 depending on the size and pattern of perforations
- **calcium silicate** – the smooth material has no significant sound absorption qualities, but the perforated tiles overlaid with a mineral wool blanket have an NRC of 0.70
- **mineral fibre** – the sound absorption qualities of this material is generally good with an NRC of 0.70 within a range of 0.56 to 0.85 depending upon surface texture and depth of indentation
- **perlite** – has an NRC of 0.50 whether plain or textured.

Note – Sound insulation:
In the preferred relationship to partitions and walls described in 3.4 suspended ceilings are not required to contribute to the sound insulation between spaces as this will be provided by the walls and partitions extending up into the ceiling void.

3.10 Wind loading

The problem of designing against the internal air pressure differences induced by the wind forces acting around the building is complex, but cannot be ignored. For this reason wind loading information is usually given in manufacturers' product literature.

The most likely manifestation of failure is when ceiling tiles are lifted or blown up into the ceiling void. Very lightweight tiles are particularly prone to this hazard.

Other likely problems with tile lift are:

- the increased risk of cross-infection
- the minimum live loading performance standard for cleaning may not be achieved
- disconcerting to occupants
- the unsightliness of disturbed tiles.

Ceilings with exposed lay-in grid suspension systems should have every tile clipped to the suspension grid to withstand upward pressure. Unfortunately spring clips are often lost or badly fitted on subsequent removal for maintenance purposes and this eventuality should be given consideration when selecting membrane materials.

3.11 Access to engineering services

Adequate access to engineering services can only be achieved by careful co-ordination of architectural and engineering design. The location of access points must be agreed at design stage, and usually falls into three types:

- trimmed openings with access panels
- a jointed membrane which can be wholly removed for access
- at pre-determined points in a jointed membrane, tiles can be removed for access.

The critical aspects of design co-ordination are minimised where a jointed membrane can be wholly removed for access.

A label or coloured disc should identify tiles which are regularly used for access to services. The access points should be designed to allow panels and tiles to be removed without damage or disfiguration.

Access through Category 1 ceilings should be avoided wherever possible. For jointless membranes in general, access can usually be provided in three ways:

- trimmed openings with access panels
- entry from an adjoining activity space
- external entry from roof level, above the jointless membrane.

3.12 Relationship of membrane to metal suspension system

Membrane material	Suspension grid	Typical method of fixing membrane to grid
plasterboard or wood composite board	concealed system	boards are screwed up to grid members as Fig. 1
	exposed system	boards are laid on flanges of grid members and held in position with spring clips, as Fig. 2 for plasterboard and Fig. 6 for wood composite
reinforced plaster perlite vermiculite	concealed system	tiles are rebated on one edge and kerfed and cut back on opposite edge to slide on to the T section grid members and to interlock with the adjoining tiles, as Fig. 3. Moulded, perforated tiles can also be screwed to grid members as Fig. 1.
metal	concealed system with spring T suspension	tiles are pushed up into spring T runners which form part of the secondary grid, as Fig. 4.
calcium silicate	concealed system	boards are screwed up to grid members, as Fig. 1.
	exposed system	boards are laid on flanges of grid members and held in position with spring clips, as Fig. 2.
mineral fibre including compressed glass fibre	concealed system	tiles have kerfed and cut back edges to slide on to the T section grid members, as Fig. 5.
mineral fibre including compressed glass fibre	exposed system	tiles are laid on flanges of grid members and held in position with spring clips, as Fig. 2.
		as above but with tiles with rebated edges, as Fig. 6.

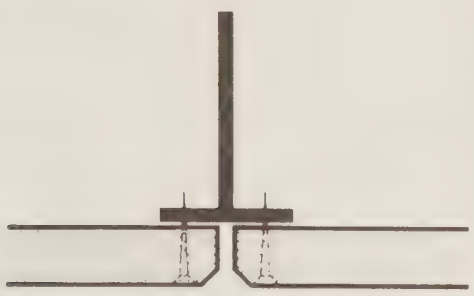


Fig. 1

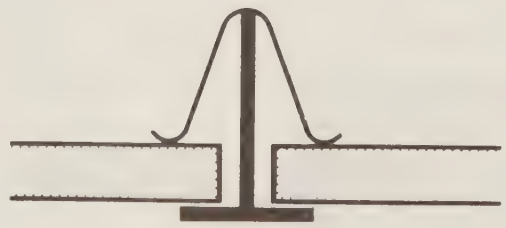


Fig. 2

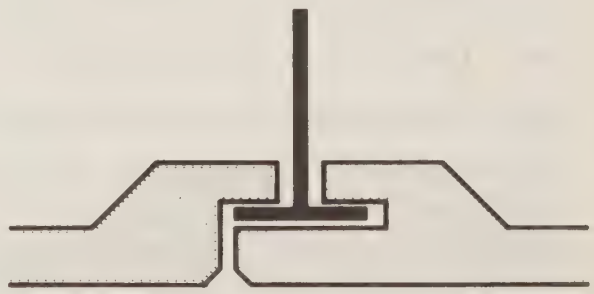


Fig. 3

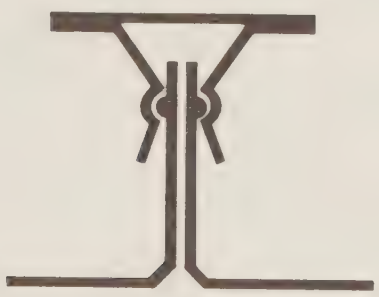


Fig. 4

Fig. 5

3.13 Hanger spacing

Optimum hanger spacings and the extent to which they can be varied, eg to accommodate engineering services differ between proprietary systems and whether the suspension system is:

- **directly hung** – in which the main structural grid network is directly suspended from the building structure overhead
- **indirectly hung** – in which the main structural grid network is supported by primary support sections which are suspended from the building structure overhead.

Main runners and thereby the hangers of suspended ceiling systems with exposed grids are controlled in one direction by their ceiling tile or panel size. Location of the hangers in the other direction can usually be varied along the length of the main runners to take account of the service distribution requirements in the void. See Illustration No. 1 on page 12.

Suspended ceilings with **concealed grids** normally have the **indirectly hung** suspension system which allows the hanger spacing to be varied in either direction up to a maximum of 1800 mm depending on which product is selected. See Illustration No. 2 on page 12.

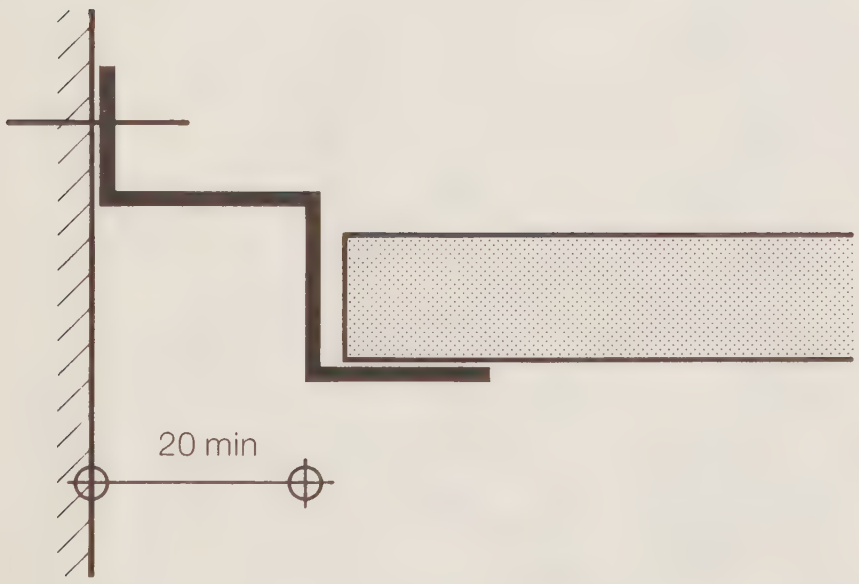
Mortices, screwed sockets and other means of fixing hangers should be provided for in the structural design.

- junction of membrane with dissimilar adjacent soffit
- fire stopping – cavity barriers
- localised perimeter junction around column or duct
- perimeter of opening in ceiling membrane to receive infill component (eg light fitting, ventilator grille or roof light) by others
- ceiling change of level junction
- ceiling bulkhead junction.

3.14 Junction details

Consideration should be given to the detailing of the following junctions:

- perimeter junction at internal wall or internal lining to external wall eg a shadow line trim:



3.15 Suspension systems

Illustration No. 1 – Directly Hung Suspension System – Exposed grid

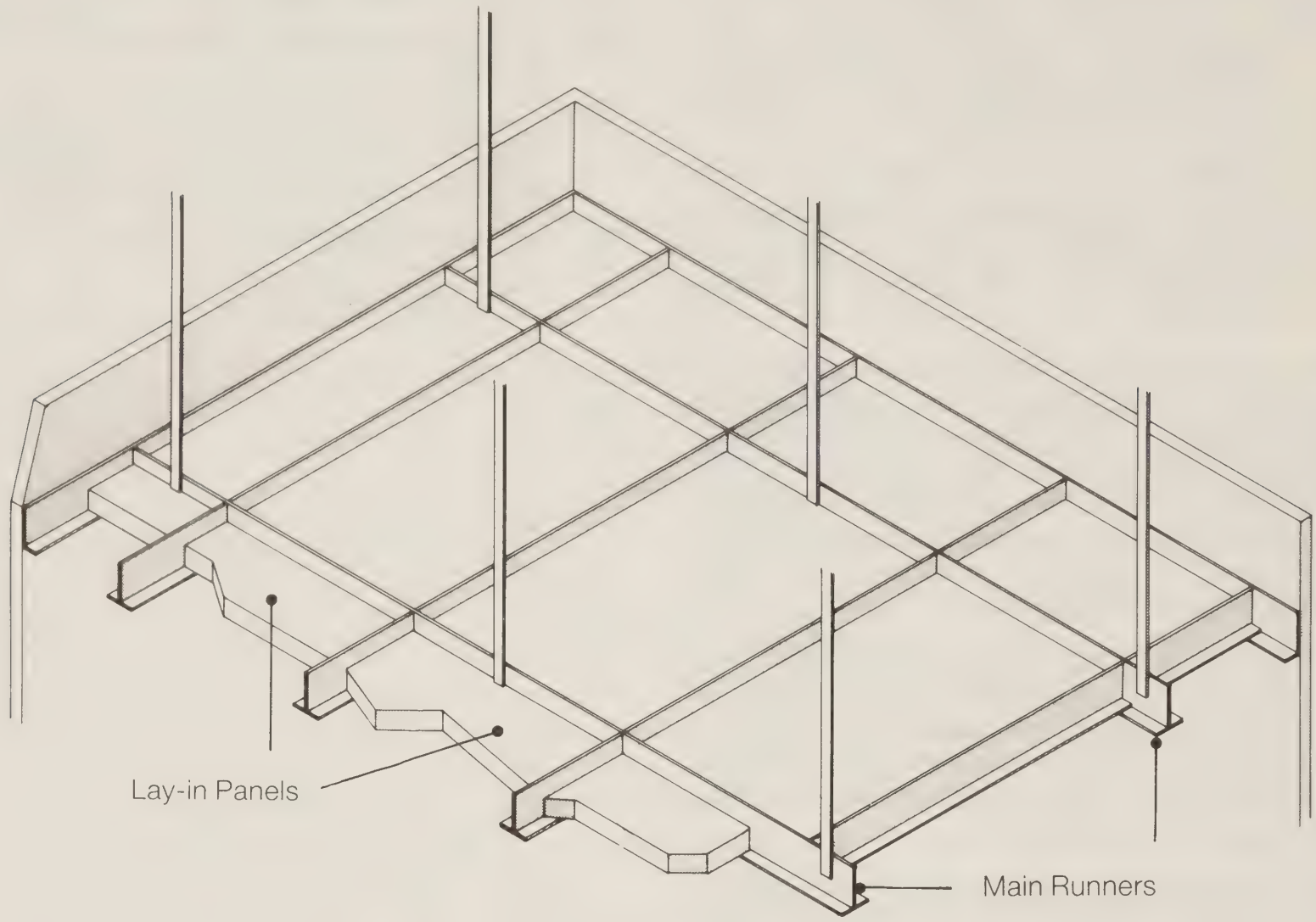
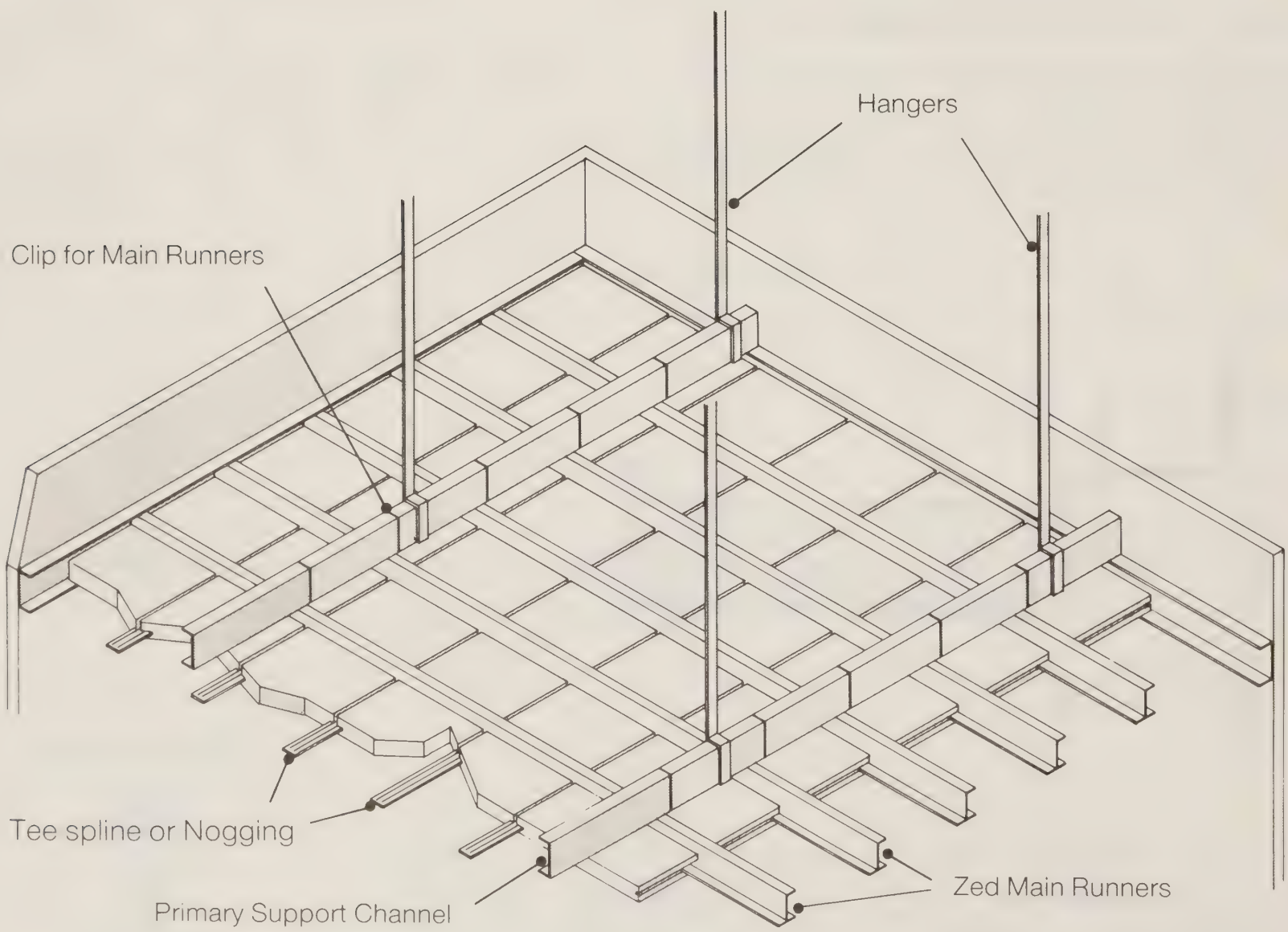


Illustration No. 2 – Indirectly Hung Suspension System – Concealed grid



3.16 Decorative finishes

Many ceiling membranes, exposed grids and perimeter trims are supplied with a factory-applied finish of:

- emulsion paint
- stove enamel
- plastics coating

The quality of the finishes varies widely and the specifier should be satisfied that the finish offered meets the performance requirements (see 2.2)

Where site applied finishes are necessary, the manufacturers recommendations should be obtained regarding suitable primers and finishing paints and the recommendations in BS 6150 – "Code of practice for painting of buildings" followed.

Site applied finishes should meet the surface spread of flame requirements as described in 2.2

Category 2 ceilings (high humidity, see 2.2) need particularly careful consideration of finishes – not only with regard to the membrane but also to ensure that all metal components are suitably protected.

The following site applied finishes for categories 1 and 2 ceilings are recommended:

- epoxy coating
- oil paint (gloss, semi-gloss or eggshell)
- vinyl gloss paint
- polyurethane coating
- spray elastomeric vinyl compound
- spray paint (multi-colour) gloss
- fabric backed vinyl covering.

For further information on the above finishes, see HTM 56 - Partitions.

3.17 Selection check list

1. Select a category (see **2.1** and **Appendix A**)
   - soffit – smooth or textured
     – imperforate or perforated
     – jointless or jointed
     (see **2.2**)
   - humidity – normal or high (see **2.2**)
   - spread of flame – Class 1 or
     – Class 0 (see **2.2**)
   - cleaning type – A, B, C or D (see **2.2**)
2. Determine joint pattern and suspension grid or traditional ceiling (see **2.2**)
3. Determine membrane material and soffit texture (see **2.2**)
4. Ensure system selected complies with 3.3 Constituent materials
5. Determine relationship to partitions and walls (see **3.4**)
6. Consider thermal insulation and vapour check in relation to roofs (see **3.5**)
7. Determine structural grade of ceiling system (see **3.7**)
8. Establish fire resistance of proprietary suspended system (see **3.8**)
9. Determine fire stopping and cavity barriers (see **3.8**)
10. Determine acoustic requirements (see **3.9**)
11. Ensure adequate wind loading of system selected (see **3.10**)
12. Determine type(s) of engineering access (see **3.11**)
13. Determine hanger spacing, whether direct or indirectly hung and fixings (see **3.13**)
14. Ensure adequate junction details available in system selected (see **3.14**)
15. If site decorated membrane, determine type of paint treatment (see **3.16**)
16. Make provision for fixings relating to the structure.
17. Consider integration with engineering fittings.
18. Consider treatment of any timber in the ceiling void.
19. Assess range of ceilings and consider rationalisation.

4 Project documentation

4.1 Drawings, schedules and specifications

The architectural and engineering design processes should produce finally agreed and fully co-ordinated reflected ceiling plans presenting the following ceilings information for each activity space in the project layout:

- identification of traditional ceilings
- identification of proprietary ceiling systems using any project referencing method
- the location (and overall dimensions) of user and engineering fittings and access panels
- the location and dimensions of roof lights, blind boxes, cubicle curtain track or other ceiling mounted fixtures
- tiling layout
- the identification and location of builder's work.

Schedules/specifications should also be prepared setting out the following information for each proprietary ceiling system:

- manufacturer's name
- trade name of system
- membrane material; unit size if jointed, thickness, texture, factory or site applied finishes, overlays
- suspension system (exposed or concealed grid) type and spacing of hangers and ceiling height.

The specification data in Appendix B together with the check list in 3.17 may be used as the basis for the preparation of a project specification.

The facilities and attendances which the main contractor will provide to the ceiling erector, will be a matter for agreement between them, but should comply with CP 290.

4.2 Bills of quantities

The ceilings should be measured and described in detail and all matters affecting the tenders, eg unusual contract conditions, compliance with CP 290 etc, should be described.

In the case of proprietary ceilings, the name of the manufacturer of each system selected should be stated, with alternatives if acceptable to the specifier. It should also be stated that the erecting firms must carry out the work in accordance with the manufacturer's published recommendations.

Competitive tenders for proprietary suspended ceilings should be obtained from at least three approved erectors of the selected ceiling system(s), the successful firm becoming a domestic sub-contractor to the main contractor.

Where the design team wishes to exercise some control over the appointment, the tender list should be included in the bills. Where the design team does not wish to exercise such control the selection of firms may be left to the main contractor.

4.3 Procurement

Suppliers offering products other than to UK standards should be required to produce evidence that their products are at least equal to those standards.

In selecting manufacturers use may be made of the list of approved suppliers and erectors forming part of the current PSA Method of Building Programme which is based on PSA product evaluation and testing procedures.

Where proprietary ceilings are to be procured from firms other than those on the PSA/MOB approved list, they should be evaluated by the specifier to ensure that they comply with the specification.

5 Site practice

5.1 Storage

Ceiling materials can be very susceptible to moisture and physical damage and should be stored in conditions of appropriate temperature and humidity, as set out in CP 290: Code of Practice for Suspended Ceilings and Linings of Dry Construction using metal fixing systems.

They should be stored on site for as short a period as possible to reduce the risk of deterioration and damage.

5.2 Installation

The setting out points common to all trades, and soffit levels should be established before any installation work is undertaken.

Ceiling systems should not be erected until all relevant site conditions set out in CP 290 have been complied with, eg wet trades complete and dried out, windows glazed and appropriate temperature/humidity maintained.

Any partitions and internal walls penetrating the ceiling void should be in position prior to the erection of the ceiling.

Fire stops/cavity barriers (not included in ceiling systems) extending from the membrane to the soffit should be fixed in position before the membrane is completed, as set out in 3.8

Any fixings required above the ceiling for fixtures such as light fittings, cubicle curtain tracks and signposting should be incorporated before the ceiling membrane is completed.

Manufacturers installation instructions

It is essential that site staff be provided with product data in the form of manufacturers product specifications and installation manuals, to enable them to carry out their supervisory role.

For each proprietary ceiling system the ceiling fixer should obtain from the manufacturer detailed instructions on its installation to ensure that the performance levels claimed are achieved. Where applicable, such instructions should refer to nationally recognised codes, eg CP 290.

Proprietary ceilings

The method of suspension and the relationship of the membrane to the suspension grid will determine whether a ceiling system can be erected in a single stage or a two stage operation.

- **single stage erection** is not feasible for areas with services in the ceiling void, as the installation, testing and acceptance of the services would have to be completed before the ceiling installation could commence.
- **two stage erection** allows the suspension grid to be fixed and stabilised before the services are installed. The membrane can then be erected at a later stage, after the installation of services.

Most suspension systems become stable when the grid work is complete, ie when the secondary cross members are attached to the main grid members and are not dependent upon the membrane to ensure stability during erection. However, some concealed panel grid systems can only be erected in a single stage operation and become stable only when the membrane tiles are installed. These ceiling systems must be avoided in areas with services in the ceiling void.

Traditional ceilings

These do not allow ready access to engineering services. Therefore unless access is available from above, all engineering services should be completed and tested prior to installation of the membrane, and access panels should be accurately located.

6 Maintenance

The form and type, material, finish, accessories and accessibility of ceiling systems should be considered in respect of the maintenance, cleaning, repair and replacement of the whole or part of the system.

A maintenance manual should be compiled by the project architect and should be handed to the maintenance staff immediately following the practical completion of the contract.

The manual should include the following:

- identification of manufacturer or proprietary system
- membrane material, thickness and finish
- method of membrane removal
- details of access panels
- strength classification eg light duty (see 3.7)
- performance category (see 2.1)
- surface spread of flame (see 2.2)
- instructions on cleaning and maintenance.

Appendices

A Schedule of activity space requirements

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Key to schedule

* indicates circulation spaces and ceilings to these spaces must have Class 0 surface spread of flame to comply with Building Regulations (E15). They include hospital streets, corridors and staircases and areas opening off them eg waiting areas, trolley bays, staff bases etc all of which can be used as escape routes. Where options are shown for circulation spaces these ceilings will have to be upgraded to Class 0 surface spread of flame – see page 3.

In the categories columns:

● indicates essential requirement

○ indicates an option

Department/ Activity Space	Categories 1	2	3	4	5	6
Accident and Emergency						
*Circulation Space	○	○	○	●	○	○
Cleaners Room	○	○	○		●	
Cleansing Room, Shower	○	●				
Clean Utility	○	○	○		●	
Consulting	○	○	○	○	○	●
Dirty Utility	○	○	○		●	
Disposal	○	○	○		●	
Drugs and Alcohol Recovery	○	○	●		○	
Interview Room	○	○	○	○	○	●
Major Treatment	●					
Office	○	○	○	○	○	●
Reception, Records	○	○	○	○	○	●
Resuscitation	○	●		○		
*Staff Base	○	○	○	●	○	○
Store	○	○	○	○	○	●
Treatment	○	○	●		○	
WC	○	○	○		●	
Administration						
*Circulation Space	○	○	○	●	○	○
Cleaners Room	○	○	○		●	
Committee Room	○	○	○	○	○	●
Common Room	○	○	○	○	○	●
Interview Room	○	○	○	○	○	●
Library	○	○	○	○	○	●
Office	○	○	○	○	○	●
Reception	○	○	○	○	○	●
Store	○	○	○	○	○	●
WC	○	○	○	○	○	●
Adult acute - Day care and treatment						
Bathroom	○	●				
*Circulation Space	○	○	○	●	○	○
Cleaners Room	○	○	○		●	
Clean Utility	○	○	○		●	
Consulting, Examination	○	○	○		●	
Doctors Office	○	○	○	○	○	●
Dirty Utility	○	○	○		●	
Disposal	○	○	○		●	
Major Treatment	○	○	●		○	
Multi-bed Room	○	○	○		●	
Office	○	○	○	○	○	●
*Patient Changing Cubicle	○	○	○	●	○	○

Department/ Activity Space	Categories 1	2	3	4	5	6
Patient Waiting	○	○	○	●	○	○
Shower	○	●				
Single-bed Room	○	○	○		●	
Sitting/Recovery	○	○	○		●	
*Staff Base	○	○	○	●	○	○
Staff Changing	○	○	○	○	○	●
Store	○	○	○	○	○	●
Treatment	○	○	●		○	
WC	○	○	○		●	
Adult acute - Nursing section						
Bathroom	○	●				
*Circulation Space	○	○	○	●	○	○
Cleaners Room	○	○	○		●	
Clean Room	○	○	○		●	
Cloak Room	○	○	○	○	○	●
Day Room	○	○	○		●	
Dining Room	○	○	○		●	
Dirty Utility	○	○	○		●	
Disposal	○	○	○		●	
*Flower Bay	○	○	○	●	○	○
*Linen Bay	○	○	○	●	○	○
Multi-bed Room	○	○	○		●	
Office	○	○	○	○	○	●
Pantry	○	○	●		○	
Relatives Room	○	○	○	○	○	●
Seminar	○	○	○	○	○	●
Shower	○	●				
Single-bed Room	○	○	○		●	
*Staff Base	○	○	○	●	○	○
Store	○	○	○	○	○	●
Switch Room	○	○	○	○	○	●
Treatment Room	○	○	●		○	
WC	○	○	○		●	
*Wheelchair Park	○	○	○	●	○	○
Ambulance						
*Circulation Space	○	○	○	●	○	○
Cleaners Room	○	○	○		●	
Control Room	○	○	○	○	○	●
Drying Room	○	●				
Kitchen	○	●				
Mess Room	○	○	○		●	
Office	○	○	○	○	○	●
Shower	○	●				
Sluice Room	○	●				
Staff Changing	○	○	○	○	○	●
Store	○	○	○	○	○	●
WC	○	○	○		●	

Department/ Activity Space	Categories 1	2	3	4	5	6
Boiler house						
*Circulation Space	○	○	○	●	○	○
Staff Accommodation	○	○	○	○	○	●
Staff WC and Washroom	○	○	○		●	
Switch Room	○	○	○	○	○	●
Children – Day-patient accommodation						
*Circulation Space	○	○	○	●	○	○
Clean Utility	○	○	○		●	
Dirty Utility, Disposal	○	○	○		●	
Multi-bed Room	○	○	○		●	
Pantry	○	○	●		○	
Single-bed Room	○	○	○		●	
Treatment, Examination	○	○	●		○	
Waiting, Play	○	○	○	●	○	○
WC	○	○	○		●	
Children – In-patient accommodation						
Bathroom	○	●				
*Circulation Space	○	○	○	●	○	○
Clean Utility	○	○	○		●	
Dirty Utility	○	○	○		●	
Flower Bay	○	○	○	●	○	○
Linen Store	○	○	○	○	○	●
Multi-bed Room	○	○	○		●	
Office	○	○	○	○	○	●
Pantry	○	○	●		○	
Play, Dining, Education	○	○	○		●	
Shower	○	●				
Single-bed Room	○	○	○		●	
*Staff Base	○	○	○	●	○	○
Store	○	○	○	○	○	●
WC	○	○	○		●	
Children – Shared accommodation						
Admission, Examination	○	○	○		●	
Adolescent s Day Room	○	○	○		●	
Baby Feed Store	○	○	○	○	○	●
*Circulation Space	○	○	○	●	○	○
Cleaners Room	○	○	○		●	
Disposal	○	○	○		●	
Education Space	○	○	○	○	○	●
*Equipment Bay	○	○	○	●	○	○
Office Interview	○	○	○	○	○	●
Parents Bedroom	○	○	○		●	

Department/ Activity Space	Categories 1	2	3	4	5	6
Parents Sitting Room	○	○	○	○	○	●
Seminar	○	○	○	○	○	●
Shower	○	●				
Staff Changing	○	○	○	○	○	●
Staff Locker Room	○	○	○	○	○	●
Switch Room	○	○	○	○	○	●
Teachers Base	○	○	○	○	○	●
Treatment	○	○	●		○	
WC	○	○	○		●	
Dental						
*Circulation Space	○	○	○	●	○	○
Laboratory and Dark Room	○	○	○		●	
Office	○	○	○	○	○	●
Recovery Room	○	○	●		○	
Store	○	○	○	○	○	●
Surgery	○	○	○		●	
Switch Room	○	○	○	○	○	●
*Waiting Area	○	○	○	●	○	○
WC	○	○	○		●	
Dining room						
*Circulation Space	○	○	○	●	○	○
Cleaners Room	○	○	○		●	
Cloak Room	○	○	○	○	○	●
Coffee Room	○	○	○	○	○	●
Dining Room	○	○	○	○	○	●
Office	○	○	○	○	○	●
Sandwich Room	○	○	○	○	○	●
Servery	○	●				
Staff Changing Room	○	○	○	○	○	●
Store	○	○	○	○	○	●
WC	○	○	○		●	
Educational accommodation						
Audio-visual	○	○	○	○	○	●
Classroom	○	○	○	○	○	●
Common Room	○	○	○	○	○	●
Demonstration	○	○	○	○	○	●
Dining	○	○	○	○	○	●
Entrance, Reception and Waiting Area	○	○	○	●	○	○
Lecture, Seminar, Discussion	○	○	○	○	○	●
Library	○	○	○	○	○	●
Office	○	○	○	○	○	●
Servery	○	●				
Staff Room	○	○	○	○	○	●
Store	○	○	○	○	○	●
WC	○	○	○		●	

Department/ Activity Space	Categories 1	2	3	4	5	6
Fracture clinic						
Appliance Fitting Room	○	○	○		●	
Clean Supplies and Preparation	○	○	○		●	
Cleaners Room	○	○	○		●	
Consulting, Examination Room	○	○	○		●	
*Circulation Space	○	○	○	●	○	○
Dirty Utility	○	○	○		●	
Disposal Holding	○	○	○		●	
Plaster Room	○	○	●		○	
*Reception, Sub-Waiting Area	○	○	○	●	○	○
*Wheelchair Park	○	○	○	●	○	○
Store	○	○	○	○	○	●
WC	○	○	○		●	
Geriatric care - Day hospital						
Bathroom	○	●				
Bedroom	○	○	○	○	○	●
*Circulation Space	○	○	○	●	○	○
Cleaners Room	○	○	○		●	
Clean Utility	○	○	○		●	
*Clothes Hanging, Waiting and Wheelchair Park	○	○	○	●	○	○
Consulting and Examination Room	○	○	○		●	
Dining	○	○	○	○	○	●
Dirty Utility	○	○	○		●	
Disposal	○	○	○		●	
General Sitting Space	○	○	○	○	○	●
Interview Room	○	○	○	○	○	●
Kitchen	○	○	●		○	
Occupational Therapy	○	○	○	○	○	●
Office	○	○	○	○	○	●
Pantry	○	○	●		○	
Physiotherapy	○	○	○	○	○	●
Quiet Room	○	○	○	○	○	●
Shower	○	●				
Staff Seminar Room	○	○	○	○	○	●
Speech Therapy	○	○	○	○	○	●
Staff Cloak Room	○	○	○	○	○	●
Store	○	○	○	○	○	●
Switch Room	○	○	○	○	○	●
Treatment Room	○	○	●		○	
Utility and Laundry	○	●				
WC	○	○	○		●	

Department/ Activity Space	Categories 1	2	3	4	5	6
Geriatric care – Nursing section						
Bathroom	○	●				
Bathroom, Treatment	○	●				
*Circulation Space	○	○	○	●	○	○
Cleaners Room	○	○	○		●	
Clean Utility	○	○	○		●	
Cloak Room	○	○	○	○	○	●
Day Room	○	○	○		●	
Dining Room	○	○	○		●	
Dirty Utility	○	○	○		●	
Disposal	○	○	○		●	
*Flower Bay	○	○	○	●	○	○
*Linen Bay	○	○	○	●	○	○
Multi-bed Room	○	○	○		●	
Occupational Therapy	○	○	○	○	○	●
Office	○	○	○	○	○	●
Pantry	○	○	●			○
Physiotherapy	○	○	○	○	●	○
Relatives Room	○	○	○	○	○	●
Seminar	○	○	○	○	○	●
Shower	○	●				
Single-bed Room	○	○	○		●	
*Staff Base	○	○	○	●	○	○
Store	○	○	○	○	○	●
Switch Room	○	○	○	○	○	●
*Waiting Area	○	○	○	●	○	○
WC	○	○	○		●	
*Wheelchair Park	○	○	○	●	○	○
Health centre						
Child Assessment	○	○	○	○	○	●
Chiropody	○	○	○	○	○	●
*Circulation Space	○	○	○	●	○	○
Cleaners Room	○	○	○		●	
Consulting, Examination Room	○	○	○		●	
Consulting Room - Audiology	○	○	○		●	
Dental Surgery	○	○	○		●	
Dispensary	○	○	●		○	
Disposal	○	○	○		●	
Health Education	○	○	○	○	○	●
Interview Room	○	○	○	○	○	●
Kitchen/Teabar	○	○	●		○	
Laboratory and Dark Room	○	○	○		●	
Nurses Service Room	○	○	○	○	○	●
Office	○	○	○	○	○	●
Pharmacy	○	○	●		○	

Department/ Activity Space	Categories 1	2	3	4	5	6
Physiotherapy	○	○	○	○	●	○
Physiotherapy - (Utility Area)	○	○	○	○	●	○
Playroom	○	○	○	○	○	●
*Pram Shelter (inside)	○	○	○	●	○	○
Recovery Room, Seminar, Library	○	○	○	○	○	●
Speech Therapy	○	○	○	○	○	●
Staff Common Room	○	○	○	○	○	●
Store	○	○	○	○	○	●
Switch Room	○	○	○	○	○	●
Treatment	○	○	●		○	
WC	○	○	○		●	

Intensive therapy unit

*Circulation Space	○	○	○	●	○	○
Cleaners Room	○	○	○		●	
Clean Utility	○	○	○		●	
Dirty Utility	○	○	○		●	
Disposal	○	○	○		●	
Laboratory	○	○	○		●	
Multi-bed Room	○	○	○		●	
Office	○	○	○	○	○	●
Pantry	○	○	●		○	
Relatives Room, Doctors Room, Overnight Stay	○	○	○	○	○	●
Single-bed Room	○	○	○		●	
*Staff Base	○	○	○	●	○	○
Staff Changing	○	○	○	○	○	●
Staff Rest Room	○	○	○	○	○	●
Store	○	○	○	○	○	●
Switch Room	○	○	○	○	○	●
WC	○	○	○		●	

Kitchen

Bulk Provisions Store	○	○	○		●	
Central Beverage Preparation Space	○	●				
Central Cooking	○	●				
Central Tray Preparation Space	○	●				
Central Tray Service Space	○	●				
Central Wash-up	○	●				
Cleaners Room	○	○	○		●	
Cooling Room or Larder	○	○	●		○	
Day to Day Store	○	○	●		○	
Diet Preparation	○	○	●		○	
Disposables Store	○	○	○		●	
Equipment Store	○	○	○	○	○	●

Department/ Activity Space	Categories 1	2	3	4	5	6
Fish Storage	Special					
General Preparation	○	○	●		○	
Kitchen Cold Room	Special					
Kitchen Deep Freeze	Special					
Meat Cold Store	Special					
Office	○	○	○	○	○	●
Pan Wash	○	●				
Pastry and Sweets Preparation	○	○	●		○	
Raw Meat and Fish Preparation	○	○	●		○	
Sandwich Preparation	○	○	●		○	
Staff Changing	○	○	○	○	○	●
Staff Rest Room	○	○	○	○	○	●
Trolley Parking Space	○	○	●		○	
Trolley Wash	○	●				
Vegetables, Salads and Fruit Preparation	○	○	●		○	
Vegetable Store	○	○	●		○	
Washing Up Materials Store	○	○	○	○	○	●
WC/Washroom	○	○	○		●	

Laundry

Assembling, Packing and Despatch	○	○	○		●	
Barrier Room	○	●				
Colandering	○	●				
Calorifier	○	●				
Central Disinfection Area	○	●				
Classification	○	○	○	○	○	●
Cleaners Room	○	○	○		●	
Drying	○	●				
Machine Cloth Store	○	○	○	○	○	●
Mess Room	○	○	○	○	○	●
Office	○	○	○	○	○	●
Pressing	○	●				
Reception	○	○	○	○	○	●
Rest Room	○	○	○	○	○	●
Solution Preparation, Storage Area	○	○	●		○	
Store	○	○	○	○	○	●
Switch Room	○	○	○	○	○	●
Washing	○	●				
Washing Materials Store	○	○	○	○	○	●
WC	○	○	○		●	

Department/ Activity Space	Categories 1	2	3	4	5	6
Maternity - Administration						
*Circulation	○	○	○	●	○	○
Classroom	○	○	○	○	○	●
Disposal	○	○	○		●	
Office	○	○	○	○	○	●
Staff Cloaks	○	○	○	○	○	●
Store	○	○	○	○	○	●
WC	○	○	○		●	
Maternity - Central delivery suite						
Abnormal Delivery Room	●					
Admission Suite	○	○	●		○	
Bathroom	○	●				
Changing Room	○	○	●		○	
*Circulation Space	○	○	○	●	○	○
Cleaners Room	○	○	○		●	
Clean Utility	○	○	○		●	
Day Room	○	○	○		●	
Delivery Room	●					
Dirty Utility	○	○	○		●	
Disposal	○	○	○		●	
Equipment Store	○	○	○	○	○	●
Linen Room	○	○	○		●	
Office	○	○	○	○	○	●
Pantry	○	○	●		○	
Scrub-up and Gowning	○	●				
Shower	○	●				
*Staff Base	○	○	○	●	○	○
*Trolley Space	○	○	○	●	○	○
WC	○	○	○		●	
Maternity - Nursing section						
Assisted Shower, WC, Wash	○	●				
Baby Feed, Demonstration Room	○	○	○		●	
Bathroom	○	●				
*Circulation Space	○	○	○	●	○	○
Cleaners Room	○	○	○		●	
Clean Utility	○	○	○		●	
Day Room, Dining Room	○	○	○		●	
Dirty Utility	○	○	○		●	
Disposal Room	○	○	○		●	
Equipment Store	○	○	○	○	○	●
*Flower Bay, Linen Store	○	○	○	●	○	○
Multi-bed Room	○	○	○		●	
Nursery	○	○	○		●	
Office	○	○	○	○	○	●

Department/ Activity Space	Categories 1	2	3	4	5	6
Pantry	○	○	●		○	
Seminar Room	○	○	○	○	○	●
Single-bed Room	○	○	○		●	
*Staff Base	○	○	○	●	○	○
Staff Changing	○	○	○	○	○	●
Switch Room	○	○	○	○	○	●
WC	○	○	○		●	
Maternity - Special care baby unit and central baby feed kitchen						
Bedroom	○	○	○		●	
Beverage Point, Baby Feed Demonstration	○	○	○		●	
Blood Gas Analysis Room	○	○	○		●	
Central Milk Kitchen	○	○	●		○	
*Circulation Space	○	○	○	●	○	○
Cleaners Room	○	○	○		●	
Clean Utility	○	○	○		●	
Day Room and Play Room	○	○	○		●	
Dirty Utility	○	○	○		●	
Disposal	○	○	○		●	
Entrance, Visitors Gowning	○	○	●		○	
Incubator Nursery	●					
Linen Room	○	○	○		●	
Nursery	○	○	●		○	
Office, Interview, Seminar Room	○	○	○	○	○	●
Reception, Breast Milk	○	○	○		●	
Shower	○	●				
*Staff Base	○	○	○	●	○	○
Staff Changing	○	○	○	○	○	●
Store	○	○	○	○	○	●
Switch Room	○	○	○	○	○	●
WC	○	○	○		●	
Medical photography and illustration						
Changing Cubicle	○	○	○		●	
*Circulation Space	○	○	○	●	○	○
Cleaners Room	○	○	○		●	
Dark Room	○	○	○		●	
Display	○	○	○	○	○	●
Editing	○	○	○	○	○	●
Finishing Room	○	○	○	○	○	●
Office	○	○	○	○	○	●

Department/ Activity Space	Categories 1	2	3	4	5	6
Reproduction and Copying Room	○	○	○	○	○	●
Staff Room	○	○	○	○	○	●
Store	○	○	○	○	○	●
Studio	○	○	○	○	○	●
WC	○	○	○		●	

Mental illness - Day hospital

Art Room	○	○	○	○	○	●
Beauty, Hairdressing	○	○	○	○	○	●
Behavioural Therapy	○	○	○	○	○	●
*Circulation Space	○	○	○	●	○	○
Cleaners Room	○	○	○		●	
Cloak Room	○	○	○	○	○	●
Dining Room	○	○	○		●	
Disposal Room	○	○	○		●	
Games Room	○	○	○	○	○	●
Group Therapy, Library, Music, Quiet, Sitting	○	○	○	○	○	●
Heavy Workshop	○	○	○	○	○	●
Hobbies Room	○	○	○	○	○	●
Horticulture	○	○	○	○	○	●
Interview Room	○	○	○	○	○	●
Kiln Room	○	○	○	○	○	●
Kitchen	○	●				
Laundry	○	●				
Light Workshop	○	○	○	○	○	●
Observation Room	○	○	○	○	○	●
Office	○	○	○	○	○	●
Patients Washroom	○	○	○		●	
Pottery Room	○	○	○	○	○	●
Recreation Store	○	○	○	○	○	●
Servery	○	●				
Sitting	○	○	○	○	○	●
Staff, Seminar Room	○	○	○	○	○	●
Store	○	○	○	○	○	●
Switch Room	○	○	○	○	○	●
Timber Store	○	○	○	○	○	●
Treatment, Clean Utility	○	○	○		●	
WC	○	○	○		●	

Mental illness - ECT

Ante-Room	○	○	○	○	○	●
*Circulation Space, Reception	○	○	○	●	○	○
Disposal Room	○	○	○		●	
Recovery Room	○	○	○		●	
Store	○	○	○	○	○	●
Treatment Room	○	○	○		●	
Washroom, Assisted WC	○	○	○		●	

Department/ Activity Space	Categories 1	2	3	4	5	6

Mortuary and post mortem

Attendants Room	○	○	○	○	○	●
Bier Room	○	○	○		●	
Body Store, Trolley Bay	○	○	○		●	
*Circulation Space	○	○	○	●	○	○
Cleaners Room	○	○	○		●	
Clean Stock	○	○	○		●	
Compressor and Switch Room	○	○	○	○	○	●
Instruments	○	○	○	○	○	●
Linen Room	○	○	○		●	
Medical Observation Room	○	○	○	○	○	●
Office	○	○	○	○	○	●
Pathologists Changing Room	○	○	○	○	○	●
Post Mortem Room	●					
Refrigerated Chambers	Special					
Shower	○	●				
Sluice	○	●				
Specimen Room	○	○	○		●	
Viewing Cubicle	○	○	○	○	○	●
Viewing Room	○	○	○	○	○	●
*Visitors Entrance	○	○	○	●	○	○
Waiting Room	○	○	○	○	○	●
WC	○	○	○		●	

Operating

Anaesthetic Room	●					
*Beverage Bay	○	○	○	●	○	○
Central Store	○	○	●			
Changing Room	○	○	●			
*Circulation Space	○	○	○	●	○	○
*Clean Corridor	○	○	○	●	○	○
Clean Utility	○	○	●			
Dirty Utility	○	○	●			
Disposal, Holding or Collection	○	○	●			
*Entrance, Reception, Transfer Area	○	○	○	●	○	○
Equipment Store	○	○	●		○	
*Exit Bay	○	○	○	●	○	○
Office	○	○	○		○	●
Operating Theatre	●					
Outer Corridor	○	○	○	●	○	○
Plaster Room	●					
Post Operative Recovery Area	●					
Preparation	●					
Scrub-up	●	○				
Shower	○	●				
Staff Control Base	●					

Department/ Activity Space	Categories 1	2	3	4	5	6
Staff Rest Room	○	○	○	○	○	●
Switch Room	○	○	○	○	○	●
WC	○	○	○		●	
X-ray Processing	○	○	○		●	

Out-patient – Children

*Circulation Space	○	○	○	●	○	○
Consulting, Examination	○	○	○		●	
Dirty Utility	○	○	○		●	
Mother and Baby Room	○	○	○		●	
Office	○	○	○	○	○	●
*Pram, Wheelchair Area	○	○	○	●	○	○
Treatment Room	○	○	●		○	
WC	○	○	○		●	
Weighing, Measuring Room	○	○	○		●	

Outpatient – Childrens Comprehensive Assessment Type A

Assessment, Observation, Remedial Therapy, Treatment	○	○	○		●	
Office, Seminar	○	○	○	○	○	●
Store	○	○	○	○	○	●
Viewing	○	○	○	○	○	●
Waiting, Dining Room	○	○	○	○	○	●

Type B

Assessment, Observation Remedial Therapy, Treatment	○	○	○		●	
*Circulation Space	○	○	○	●	○	○
Consulting, Examination Room	○	○	○		●	
Dirty Utility	○	○	○		●	
Office	○	○	○	○	○	●
Office, Seminar	○	○	○	○	○	●
*Pram Store, Wheelchair Park	○	○	○	●	○	○
Staff Locker Room	○	○	○	○	○	●
Store	○	○	○	○	○	●
Switch Room	○	○	○	○	○	●
Viewing Room	○	○	○	○	○	●
Waiting, Dining Room	○	○	○	○	○	●
WC	○	○	○		●	

Out-patient – General

Consulting, Examination Room	○	○	○		●	
*Changing Cubicle	○	○	○	●	○	○
*Circulation Area	○	○	○	●	○	○
Cleaners Room	○	○	○		●	
Clean Utility	○	○	○		●	

Department/ Activity Space	Categories 1	2	3	4	5	6
Dirty Utility	○	○	○		●	
Disposal	○	○	○		●	
Office	○	○	○	○	○	●
Ophthalmic Room	○	○	○		●	
Porters Room	○	○	○	○	○	●
Reception	○	○	○	○	○	●
Store	○	○	○	○	○	●
Test Room	○	○	○		●	
Treatment Room	○	○	●		○	
*Trolley & Wheelchair Area	○	○	○	●	○	○
WC	○	○	○		●	

Out-patient – Mental illness

Assisted Washroom and WC	○	○	○		●	
*Circulation Space	○	○	○	●	○	○
Cloakroom, Patients	○	○	○	○	○	●
Consulting, Examination Room	○	○	○		●	
Dirty Utility, Disposal	○	○	○		●	
Interview Room	○	○	○	○	○	●
Medical Records	○	○	○	○	○	●
Office	○	○	○	○	○	●
Psychological Testing Room	○	○	○	○	○	●
Staff Changing	○	○	○	○	○	●
Store	○	○	○	○	○	●
Treatment, Clean Utility	○	○	○		●	
WC	○	○	○		●	

Out-patient – Ophthalmic

*Circulation Space	○	○	○	●	○	○
Cleaners Room	○	○	○		●	
Clean Utility	○	○	○		●	
Consulting, Examination Room	○	○	○		●	
Dark Room	○	○	○		●	
Dirty Utility	○	○	○		●	
Dispensing Optician	○	○	○	○	○	●
Fluorescein, Angiography	○	○	○		●	
Office	○	○	○	○	○	●
Orthopist	○	○	○	○	○	●
*Staff Base	○	○	○	●	○	○
Locker Room	○	○	○	○	○	●
Store	○	○	○	○	○	●
Switch Room	○	○	○	○	○	●
Treatment Room	○	○	●		○	
*Waiting, Recovery Area	○	○	○	●	○	○
Patients WC	○	○	○		●	
Staff WC	○	○	○		●	

Department/ Activity Space	Categories 1	2	3	4	5	6

Pathology

Blood Bank	Special					
Centrifuge Room	○	○	○		●	
*Circulation Space	○	○	○	●	○	○
Cleaners Room	○	○	○		●	
Cloak Room	○	○	○	○	○	●
Disposal Room	○	○	○		●	
Examination Room	○	○	●		○	
Hot or Cold Room	Special					
Laboratory	○	○	●		○	
Media Room	○	○	●		○	
Mounting, Preparation	○	○	●		○	
Museum	○	○	○	○	○	●
Office	○	○	○	○	○	●
Staff Room	○	○	○	○	○	●
Sterilising Room	○	●				
Store	○	○	○	○	○	●
*Waiting Area	○	○	○	●	○	○
Wash-up	○	●				
WC	○	○	○		●	
Workshop	○	○	○	○	○	●

Pharmacy

Advisory Cubicle	○	○	○	○	○	●
Aseptic Filling	●					
Aseptic Room	●					
Balance Room	●					
Bottle Preparation	○	○	○		●	
Changing Room, Robing Interchange Area	○	○	●		○	
Chemicals Store	○	○	○	○	○	●
*Circulation Space	○	○	○	●	○	○
Cleaners Room	○	○	○		●	
Cloak Room	○	○	○	○	○	●
Container Preparation	○	○	○		●	
Containers - clean	○	○	○		●	
Dispensary	○	○	●		○	
Dressing Store	○	○	●		○	
Drug Information Library	○	○	○	○	○	●
Emergency Store	○	○	○	○	○	●
Equipment Cleaning	○	○	○	○	○	●
Finished Products Store	○	○	○	○	○	●
Finished Products Quarantine Store	○	○	○	○	○	●
Flammable Store	Special					
Goods Reception	○	○	○	○	○	●
Incubation	○	○	●		○	

Department/ Activity Space	Categories 1	2	3	4	5	6
Incoming Materials (Quarantine)	○	○	●		○	
Inspection, Label Preparation, Labelling	○	○	○		●	
Laboratory	○	○	○		●	
Laundry Facility	○	●				
Materials Store	○	○	○	○	○	●
Media Kitchen	○	○	●		○	
Medical Gas Cylinder Store	Special					
Microbiological Media Store	○	○	○		●	
Office	○	○	○	○	○	●
Packaging and Overwrap	○	○	○	○	○	●
Patient Waiting	○	○	○	○	○	●
Porters Room, Base	○	○	○	○	○	●
Preparation, Filling Area	○	○	●		○	
Preparation Room	○	○	●		○	
Reference Samples Store	○	○	○	○	○	●
Repackaging	○	○	○	○	○	●
Reusable Container Collection	○	○	○	○	○	●
Security Store	○	○	○	○	○	●
Seminar	○	○	○	○	○	●
*Staff Entrance	○	○	○	●	○	○
Sterilisation	○	●				
Still Room	○	●				
Store	○	○	○	○	○	●
*Trolley and Equipment Park	○	○	○	●	○	○
Ward Service Area	○	○	○		●	
WC	○	○	○		●	

Radiodiagnostic

*Circulation Space	○	○	○	●	○	○
Cleaners Room	○	○	○		●	
Clean Utility	○	○	○		●	
Dark Room	○	○	○		●	
Dirty Utility	○	○	○		●	
Disposal	○	○	○		●	
*Dressing Cubicle	○	○	○	●	○	○
Lavage Room	○	○	○		●	
Linen Store	○	○	○	○	○	●
Mobile X-ray Store	○	○	○	○	○	●
Office	○	○	○	○	○	●
Radiodiagnostic Room	○	○	○		●	
Radiographer	○	○	○	○	○	●
Records	○	○	○	○	○	●
Recovery Room	○	○	○		●	
Staff Room	○	○	○	○	○	●
Store	○	○	○	○	○	●

Department/ Activity Space	Categories 1	2	3	4	5	6
*Trolley Space	○	○	○	●	○	○
Ultrasound	○	○	○		●	
Viewing and Sorting Room	○	○	○		●	
WC	○	○	○		●	

Rehabilitation

Apparatus Bay	○	○	○	○	○	●
Apparatus Bay - Hydrotherapy	○	●				
Apparatus Store	○	○	○	○	○	●
Bathroom	○	●				
Bedroom	○	○	○	○	○	●
Changing Cubicle - Gymnasium	○	○	○	○	○	●
Changing Cubicle - Hydrotherapy	○	●				
Changing Cubicle - Treatment	○	○	○		●	
*Circulation Space	○	○	○	●	○	○
Cleaners Room	○	○	○		●	
Clinical Room	○	○	○		●	
Consulting, Examination Room	○	○	○		●	
Disposal Room	○	○	○		●	
Electronyography Room	○	○	○		●	
Gymnasium	○	○	○	○	○	●
Heavy Workshop	○	○	○	○	○	●
Hydrotherapy	○	●				
Individual Open Exercise Area	○	○	○	○	○	●
Interview Room	○	○	○	○	○	●
Kitchen	○	●				
Laundry	○	●				
Light Workshop	○	○	○	○	○	●
*Main Waiting	○	○	○	●	○	○
Patients Shower	○	●				
Plaster and Plaster Splints	○	○	○		●	
Porters Base	○	○	○	○	○	●
Preparation Bay	○	○	○		●	
Reception, Records Office	○	○	○	○	○	●
Recovery Room	○	○	○		●	
Speech Therapy	○	○	○	○	○	●
Staff Changing	○	○	○	○	○	●
Staff Changing Cubicle - Hydrotherapy	○	●				
Staff Room, Seminar	○	○	○	○	○	●
Store	○	○	○	○	○	●
Switch Room	○	○	○	○	○	●
Timber, Materials Store	○	○	○	○	○	●
Treatment Cubicle	○	○	○		●	
Wax Treatment Room	○	○	○		●	
WC	○	○	○		●	
*Wheelchair Bay	○	○	○	●	○	○

Department/ Activity Space	Categories 1	2	3	4	5	6

Residential accommodation

Bathroom	○	●				
Bedroom	○	○	○	○	○	●
Bed-Sitting Room	○	○	○	○	○	●
*Circulation Space	○	○	○	●	○	○
Cleaners Room	○	○	○		●	
Cloak Room	○	○	○	○	○	●
Common Room	○	○	○	○	○	●
Kitchen	○	○	●		○	
Living Room	○	○	○	○	○	●
Office	○	○	○	○	○	●
Shower	○	●				
Sitting Room	○	○	○	○	○	●
Utility Store	○	○	○	○	○	●
WC	○	○	○		●	

Secure unit

Bathroom	○	●				
*Circulation Space	○	○	○	●	○	○
Classroom	○	○	○	○	○	●
Clinical, Examination Room	○	○	○		●	
Cleaners Room	○	○	○		●	
Communal Area	○	○	○	○	○	●
Duty Room	○	○	○	○	○	●
Group Therapy Room	○	○	○	○	○	●
Gymnasium	○	○	○	○	○	●
Interview, Conference	○	○	○	○	○	●
Kitchen	○	○	●		○	
Launderette, Utility Room	○	●				
Library	○	○	○	○	○	●
Linen Store	○	○	○	○	○	●
Office	○	○	○	○	○	●
OT Hobbies Room	○	○	○	○	○	●
Quiet Room	○	○	○	○	○	●
Secure Room	Special					
Shower	○	●				
Single-bed Room	○	○	○		●	
Staff Rest Room	○	○	○	○	○	●
Store	○	○	○	○	○	●
Study Room	○	○	○	○	○	●
Training Room	○	○	○	○	○	●
Visitors Room	○	○	○	○	○	●
WC	○	○	○		●	

Department/ Activity Space	Categories 1	2	3	4	5	6
Sterilising and disinfecting unit						
*Circulation Space	○	○	○	●	○	○
Cleaners Room	○	○	○		●	
Disposal Collection	○	○	○		●	
Disposal Holding Area	○	○	○		●	
Materials Holding Store	○	○	○	○	○	●
Medical Equipment Test Area, Service, Work Area	○	○	○	○	○	●
Office	○	○	○	○	○	●
Reception – Clean Supply	○	○	○		●	
Reception – Soiled Goods	○	○	○		●	
Staff Changing	○	○	○	○	○	●
Staff Room	○	○	○	○	○	●
Sterile Goods Store	○	○	○	○	○	●
Sterilizer Working Area	○	●				
Trolley Unloading, Maintenance Area	○	○	○	○	○	●
Trolley Wash	○	●				
Wash Room	○	●				
WC	○	○	○		●	
Work Area	○	○	○		●	
Street						
Circulation				●		
Sub waiting			●			
Stairs				●		
Lift lobby				●		
Disposal Room	○	○	●	○	○	○
Main entrance						
Entrance Lobby				●		
Entrance foyer/Waiting				●		
Quiet Room	○	○	○	○	○	●
Reception/Enquiries				●		
Shop				●		
Store	○	○	○	○	○	●
Office	○	○	○	○	○	●
Duty Room	○	○	○	○	○	●

Department/ Activity Space	Categories 1	2	3	4	5	6
Works unit						
*Circulation Space	○	○	○	●	○	○
Office	○	○	○	○	○	●
Staff Accommodation	○	○	○	○	○	●
Staff Changing	○	○	○	○	○	●
Store	○	○	○	○	○	●
WC	○	○	○	○	○	●
Workshop	○	○	○	○	○	●
Younger disabled unit						
Bathroom	○	●				
Bedroom	○	○	○		●	
*Circulation Space	○	○	○	●	○	○
Clean Utility	○	○	○		●	
Cleaners Room	○	○	○		●	
Clinical, Examination	○	○	○		●	
Day Space	○	○	○		●	
Dining Room	○	○	○		●	
Dirty Utility	○	○	○		●	
Hobbies Room	○	○	○	○	○	●
Office	○	○	○	○	○	●
Pantry	○	○	●		○	
Quiet Room	○	○	○	○	○	●
Shower	○	●				
Store	○	○	○	○	○	●
Visitors Room	○	○	○	○	○	●
WC	○	○	○		●	

Categories of performance

Physical and performance characteristics	Categories of ceiling performance					
	1	2	3	4	5	6
Soffit:						
smooth	●	●	●	○	○	○
textured				○	○	○
imperforate	●	●	●	○	●	○
perforated				○		○
jointless	●	○	○	○	○	○
jointed		○	○	○	○	○
Humidity:						
normal	●		●	●	●	●
high		●				
Spread of flame:						
class 1	●	●	●		●	●
class 0				●		
Cleaning type:						
A	●					
B		●				
C			●		●	
D				●		●

● – indicates essential requirement ○ – indicates options

Key to Categories of Performance

- ● indicates essential requirement
- ○ indicates options

Class O Surface Spread of Flame

An asterisk * in the Schedules indicates that circulation spaces must have Class O surface spread of flame to comply with Building Regulation (E15). They include hospital streets, corridors and staircases and areas opening off them eg waiting areas, trolley bays, staff bases etc, all of which can be used as escape routes. Where options are shown for circulation spaces these ceilings will have to be upgraded to Class O surface spread of flame – see page 3.

Cleaning types

Type	Daily	Quarterly	Annually
A	By hand with a wet mop or cloth; or by machine spraying water at mains pressure with removal by suction		
B		By hand with a damp mop or cloth; or by machine spraying water at pump pressure with removal by suction	
C		By hand with a damp mop or cloth	
D			By industrial suction machine

B National Building Specification

N B S is a library of standard specification clauses, covering most kinds of building work and comprising a wide range of clauses, with accompanying guidance notes. All clauses are optional and their combination into a job specification is left to the specifier. N B S has great flexibility and it can be adapted to suit the technical needs and preferences of different projects, organisations and specifiers.

Specifications go out of date as a result of technical innovation or major review of a key BSI document. As N B S sections become affected by such major changes they are re-issued to members of the subscription service. Users are advised to ensure that they refer to the current edition.

The above sections can be purchased from:
NBS Services Ltd.,
Mansion House Chambers,
The Close,
Newcastle upon Tyne, NE1 3RE

References

Other DoH data
Activity Data Base
Ergonomic data and Nucleus Data Pack
Health Building Notes
Health Design Notes
Health Technical Memoranda
Nucleus Data Packs

Other Official Publications
DOE/PSA – Method of Building – Performance Specification, Suspended Ceilings

Statutory instruments

The Building Regulations

British Standard Specifications and Codes of Practice

BS 476 Fire testing on building materials and structures:
Part 4 Non combustibility test for materials
Part 6 Method of test for fire propagation for products
Part 7 Surface spread of flame tests for materials
Part 8 Test methods and criteria for the fire resistance of elements of building construction
Part 20 Method for determination of the fire resistance of elements of construction (general principles)
Part 22 Determination of the fire resistance of non-loadbearing elements of construction (to supersede Part 8 when published)

BS 1191 Part 1 Gypsum building plasters excluding premixed lightweight plasters
Part 2 Premixed lightweight plasters

BS 1230 Part 1 Gypsum plasterboard

BS 2750 Methods of measurement of sound insulation in buildings and of building elements

BS 2989 Hot-dip zinc coated steel sheet and coil

BS 4049 Glossary of terms applicable to internal plastering, external rendering and floor screeding

BS 4330 Recommendations for the co-ordinating of dimensions in building. Controlling dimensions

BS 5250 Code of basic data for the design of buildings: the control of condensation in dwellings

BS 5821 Method for rating sound insulation in buildings and of building elements.

BS 6150 Code of practice for painting of buildings

BS 6214 Specification for jointing materials for plasterboard

BS CP290 Code of Practice for suspended ceilings and linings of dry construction using metal fixing systems (currently under revision as a new BSS)

BRE Digests
No.214 Cavity barriers and fire stops: Part 1
No.215 Cavity barriers and fire stops: Part 2
No.233 Fire hazard from insulating materials

Trade Associations
Suspended Ceilings Association, 29 High St., Hemel Hempstead, Herts HP1 3AA.
Guide No.1 Good practice for the installation of suspended ceilings
Guide No.2 Recommendations for suspended ceiling grid systems
Guide No.3 Recommendations for the selection of suspended ceiling materials

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